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U. S. DEPARTMENT OF AGRICULTURE - FOREST SERVICE
California Forest and Range Experiment Station

FOREST PEST CONDITIONS IN CALIFORNIA - 1957

FOREST INSECT CONDITIONS

Timber losses due to insects have shown a marked increase in California for 1957, and in many areas critical epidemics are now underway. Many insects not reported in 1956 are this year causing serious local damage. Last year insect problems were quite localized while this year problems are scattered throughout the State. In spite of the fact that losses due to the western pine beetle have shown a marked increase over the State as a whole, it is very encouraging to find that losses remain at a relatively low level on areas treated by sanitation-salvage. At Blacks Mountain, for instance, losses on untreated virgin areas are 193 board-feet, which is the highest on record, compared to 56 board-feet on areas treated by sanitation salvage. The Cooperative Forest Pest Detection Survey program has shown real progress in 1957. The California Forest and Range Experiment Station has received a total of 208 detection reports on insects, disease and animal damage as of October 5, 1957. This compares with 120 received at the same date one year ago.

The following report is a digest of information on insect infestations received by the Experiment Station from State, federal and private cooperators.

1. The western pine beetle in ponderosa pine and the mountain pine beetle in sugar pine have increased and are aggressively killing timber statewide.

2. The Jeffrey pine beetle is causing serious damage on portions of the Sequoia, Inyo and Tahoe National Forests.

3. The fir engraver is aggressive in many scattered areas statewide.

4. Tip killing of ponderosa and sugar pine and other associated species occurs in northeastern California and the southern Sierras. Twig beetles are usually associated with this damage.

5. The mountain pine beetle in lodgepole pine continues at an epidemic level in Yosemite National Park and on the Modoc National Forest.

6. The lodgepole needle miner in lodgepole pine continues at a very high population level in Yosemite National Park. A new infestation of the insect was discovered on the Inyo National Forest.

7. The Jeffrey pine needle miner is causing local damage on the Sequoia-Kings Canyon National Park and on the Inyo N. F.

8. The Douglas-fir beetle is starting to show grouping tendencies on portions of the Klamath and Six Rivers National Forests after reaching a very low level in 1956.

9. An introduced spruce needle miner was discovered in ornamental plantings in Alturas and vicinity.

10. Pine sawflies again caused heavy defoliation of a small plantation on the Howard Forest; a new outbreak of pine sawflies was found in the Shasta brushfield plantation where the insects completely stripped several hundred acres in early June.

11. The Douglas-fir tussock moth is at a low level after being in outbreak last season. Some evidence of light feeding was observed but no egg masses were found this season.

12. The pine engraver beetles are less aggressive than last season on the basis of fades observed in late summer.

13. The pine reproduction weevil continues as a serious threat to local plantings, with a new center of infestation discovered on the Eldorado National Forest (Tony Gulch).

14. A native tip moth was found to be causing considerable damage in a young pine plantation on the Modoc and Eldorado N.F. This is the first evidence we have of concentrated damage by this insect.

15. The Great Basin tent caterpillar caused very heavy defoliation to several thousand acres of mixed brush between Chester and Westwood.

16. The black pine-leaf scale was found to be causing serious damage to the crowns of mature sugar pines in local areas on the Trinity and Eldorado N.F.

17. Seed and cone insects are causing serious damage Statewide to the very light cone crop of 1957.

18. The needle-sheath miner is causing some local damage to pine plantations at Placerville and on the Modoc National Forest.

19. The red turpentine beetle has been very aggressive in its association with the western pine beetle and the mountain pine beetle.

20. The balsam woolly aphid, a serious pest in Pacific silver fir and subalpine fir in Washington and Oregon, occurs as far south as Crater Lake, Oregon. A survey for this insect in northwestern California failed to find any evidence of the insect.

21. The California flatheaded borer status is unknown at this time. No detection reports have been received on the insect, but it is believed to still be in epidemic status in southern California

A. WESTERN PINE BEETLE AND MOUNTAIN PINE BEETLE

There are several areas in the State where the western pine beetle in ponderosa pine and the mountain pine beetle in sugar pine are both in outbreak and causing serious damage in mixed conifer stands. Losses in these stands show a considerable increase throughout the whole westside Sierra timber belt. Timber owners or operators in this belt should be on the lookout for signs of increasing losses, so that they can institute control measures if need be. The principal outbreaks known are as follows:

1. McGee Burn - Sequoia N.F. and Sequoia-Kings Canyon N.P.

A serious outbreak of these bark beetles developed on and near the 1955 McGee burn as a result of a build-up of populations in trees weakened by the fire. The present outbreak covers about 70,000 acres, containing an estimated 7,750 infested trees comprising about 6 million board-feet. This is the most serious pine bark-beetle infestation in California since the 1944-45 Burney-McCloud infestation. Considerable progress has already been made on control with chemicals and by salvaging infested trees in this area. Approximately 4 million board-feet of infested material has been salvaged, and more than one additional million board-feet treated by chemicals. A zone of infestation has been established and the U.S. Park Service, the U.S. Forest Service, the California State Division of Forestry and private owners have undertaken control since about mid-August. Further control action is likely to be necessary to mop up the infestation in this area next spring.

Action.--Reappraise early in 1958, and carry on additional control if surveys show it to be necessary.

2. Haystack Burn, Klamath National Forest

A recent detection report from the Klamath N.F. indicated a situation existing on a portion of the Haystack Burn similar to the McGee burn. It has not been possible to appraise the infestation yet, but an appraisal is planned on October 28. Institution of control measures is being withheld until the appraisal has been made.

Action.--Complete appraisal and apply control measures if the survey shows they are needed.

3. Strawberry Valley, Plumas N.F.

An outbreak of the western pine beetle and mountain pine beetle was called to the attention of the Station on August 19 through a detection report from private industry. This infestation is on Soper Wheeler and U.S. Forest Service ownership. A program of salvaging infested trees by Soper Wheeler is underway on company and Forest Service ownership. The program appears to be adequate to control the outbreak.

Action.--Continue salvage of infested trees if further infestation is found.

4. Pinecrest-Stanislaus National Forest

A recent detection report from the U.S. Forest Service reported increasing damage by the western pine beetle and the mountain pine beetle in the Pinecrest recreation area. An appraisal of the area confirmed the fact that both ponderosa and sugar pines were being killed in groups and indicated the need for action. Some loss is on private land which would require setting up a zone of infestation before setting up a control program. Most of the loss, however, is on Forest Service ownership.

Action.--Salvage accessible, merchantable infested trees and apply direct control measures to unmerchantable or inaccessible trees. Set up a zone of infestation to solve the portion of the problem on private land, if necessary.

5. Callahan, Klamath National Forest

A detection report from the California State Division of Forestry and Forest Service indicated a buildup of both mountain pine beetle and western pine beetle in this area.

Action.--Make an appraisal survey to determine what action is warranted and undertake control if results indicate that control is needed.

6. Forest Hill, Tahoe National Forest

A detection report from the Forest Service indicated a general buildup of western pine beetle and mountain pine beetle in the Forest Hill District.

Action.--Make an appraisal and undertake control if control is indicated by results.

7. Sweetwater-Feliciana - Sierra National Forest

A detection report from the Forest Service followed by an appraisal survey indicated an epidemic of the western pine beetle and mountain pine beetle in the area.

Action.--Control thru the salvage of infested trees, for late winter or early spring.

8. Wawona Basin - Tuolumne Grove, Yosemite National Park

Western pine beetle and mountain pine beetle showing grouping tendencies in both areas in early and midsummer broods.

Action.--That consideration be given to the possibility of summer maintenance in both these areas and also to explore the possibility of salvage of infested trees.

B. THE JEFFREY PINE BEETLE

1. Cannel Meadows - Sequoia National Forest - The Jeffrey pine beetle is epidemic throughout some 100,000 acres in the Cannel Meadows working circle. Sanitation-salvage is being initiated in the area to reduce the losses. A recent appraisal survey in the area indicates a loss of about 50 million board-feet of timber during the past 2 years.

Action.--It is recommended that sanitation-salvage be continued throughout the pine type.

2. Deer Mountain, Inyo National Forest

A detection report from the U.S. Forest Service indicates an epidemic of the Jeffrey pine beetle in the Deer Mountain area of the Inyo National Forest.

Action.--Conduct an appraisal survey, and institute control measures if control is warranted.

3. Deadman - Inyo National Forest

The Jeffrey pine beetle activity continues at a high level in the Deadman area of the Inyo. Sanitation-salvage operations are about completed in this area.

Action.--Institute a maintenance control program through the salvage of accessible, merchantable infested trees and treating unmerchantable or inaccessible infested trees.

4. Dodge Mine - Plumas National Forest

A detection report from the U.S. Forest Service indicates increasing loss due to the Jeffrey pine beetle in this area.

Action.--No recommendation pending an appraisal.

5. Truckee - Tahoe National Forest

A detection report from industry followed by an appraisal survey indicates a local epidemic of the Jeffrey pine beetle about five miles southeast of Truckee.

Action.--Control through the salvage of infested trees.

C. THE FIR ENGRAVER

The fir engraver appears to be more aggressive this year than last, but the loss is quite scattered and general and only a few local areas where loss is concentrated.

Action.--No control recommended because of the scattered nature of the loss and because of the occurrence of successful patch attacks in green trees.

D. TIP-KILLING

A total of seven detection reports have been received from various sources calling attention to the prevalence of tip-killing in ponderosa, Jeffrey, and sugar pine, incense-cedar and white fir. This damage is widespread and covers many thousands of acres from Shasta County to Fresno County. Appraisals have been made in Shasta County where secondary bark beetles were found associated with the tip-killing, but it is believed that some adverse climatic factor is initially responsible for the damage. Generally, only a small portion of the tip of the crown has been killed, but, in some cases, attacks by primary bark beetles have followed and some mortality has occurred.

Action.--Continued surveillance to detect any increase in primary bark beetle attack.

E. MOUNTAIN PINE BEETLE IN LODGEPOLE PINE

1. Yosemite National Park

The mountain pine beetle continues in an epidemic status in the Dingley and Delaney Creek drainages in Yosemite National Park. Areas where control was undertaken last year show signs of decreasing losses, but areas where no control was undertaken show considerable increase with the infestation spreading toward Tuolumne Meadows.

Action.--Control recommended for all of Dingley and Delaney Creek drainages.

2. Skunk Cabbage, Modoc National Forest

A serious infestation of the mountain pine beetle in lodgepole pine was reported last year in the Skunk Cabbage area in the South Warner Mountains on the Modoc National Forest. This infestation still persists at an epidemic level. Control was suggested for the area last year providing timber values would warrant. However, a careful evaluation by the U. S. Forest Service of values at stake balanced against the high cost of control lead to the decision to take no action. Since no new factor has entered the formula in 1957 the original decision still stands.

F. LODGEPOLE NEEDLE MINER

This insect continues at an epidemic level in Yosemite National Park. Experimental control has been undertaken this season against the adults and newly hatched larvae by using malathion applied by a helicopter. Results from these tests should be available soon. The needle miner was found in lodgepole pine on the Inyo National Forest for the first time this season.

Action.--If experimental control against the larvae proves effective, conduct a full-scale operation in 1958 in the Tuolumne Meadows high-use area.

G. THE JEFFREY PINE NEEDLE MINER

This insect was found to be causing considerable damage in local areas in the Grant Grove area of the Sequoia-Kings National Park and in the Deadman area of the Inyo National Forest.

Action.--Keep a very close watch on this insect for signs of increases in damage and area infested.

H. DOUGLAS-FIR BEETLE

Detection reports from the U. S. Forest Service indicates that Douglas-fir beetle damage is again on the increase on the Six Rivers and Klamath National Forest after reaching a very low level last season. Groups up to eight trees are common in many areas on these two forests.

Action.--Continued watchfulness for indication of further increases.

I. SPRUCE NEEDLE MINER

An introduced spruce needle miner, Taniva albolineana Kearf., was discovered on ornamental spruces in and around Alturas in Modoc County. The State Bureau of Entomology has attempted an eradication program. Since the insect is restricted to spruce, it is not considered a threat to California native conifers.

Action.--Be on the lookout for other infestations.

J. SAWFLIES

1. White-fir Sawfly

The white-fir sawfly appears to be at a rather low level this season; only one detection report was received of light feeding near Blue Lake on the Modoc National Forest.

Action.--Continued surveillance to detect any increase in population or damage.

2. Pine Sawflies

A rather severe outbreak of a pine sawfly was reported last season on the Howard Forest. This infestation is continuing at a high level this season. Another outbreak area,possibly involving a different species, was detected in the Mt. Shasta brushfield planting. Several hundred acres of planted Jeffrey and ponderosa pine were stripped of last years foliage early in the season.

Action.--Continued surveillance to detect any increase in sawfly activity in the two above areas or elsewhere.

K. DOUGLAS-FIR TUSSOCK MOTH

The Douglas-fir tussock moth is reduced to an endemic level in all areas where it was epidemic last season. Very light feeding was observed, but no larvae or current egg masses were found this season. Considerable mortality to white fir has occurred in areas of heavy defoliation last season.

Action.--Continue to keep these areas under surveillance to detect any signs of a new build-up of population.

L. PINE ENGRAVER BEETLE

M. PINE REPRODUCTION WEEVIL

This weevil continues as a serious threat to local pine plantations. One new center of infestation was detected on the Eldorado National Forest in a hybrid out-planting. The outbreak reported late last season in a portion of the Shasta brushfield planting was controlled through aerial application of DDT in late June.

Action.--Keep a sharp lookout for early signs of weevil damage in any plantings over 3 years of age.

N. PINE TIP MOTHS

A native pine tip moth was detected in a young pine plantation on the Modoc and Eldorado National Forests. Evidence in these two plantings indicate the insect has potentialities of causing considerable damage.

Action.--No action, pending further appraisal.

O. GREAT BASIN TENT CATERPILLAR

Several detection reports were received from industry and the Forest Service on a great basin tent caterpillar outbreak covering several thousand acres of mixed brush between between Westwood and Chester. There is indication that this heavy defoliation of brush, particularly manzanita, may cause considerable mortality.

Action.--That consideration be given to the possibility of using the insect as a biological agent in control of brush in areas which are to be converted to growing timber.

P. SEED AND CONE INSECTS

Seed and cone insects are causing very serious damage to a generally light pine seed crop. It is estimated that 85 to 90%of the sugar pine cone crop statewide has been destroyed by the sugar pine cone beetle. Reduction in the seed crop of Jeffrey pine from pine seed worms is placed at

75 to 80 percent. Damage is so severe on the Inyo National Forest that plans for the collection of a large volume of cones have been cancelled. There was practically no ponderosa pine cone crop this season, but such cones as were produced have been almost completely destroyed. The Douglas-fir cone crop was very light over the State as a whole, but such cones as were produced were almost completely destroyed by Dioryctria and Barbara species. The cone crop in true firs was generally fair, statewide, but damage from insects was very high.

Action.--No action recommended.

Q. SCALE INSECTS

1. Black Pine-Leaf Scale

The black pine-leaf scale continues to cause some damage to ponderosa and Jeffrey pine locally in southern California in the Crestline area and in northern California in the Susanville area. This insect was found for the first time to be causing serious crown deterioration in mature and overmature sugar pines in local areas on the Trinity and Eldorado National Forests. Damage was so heavy in some trees that it caused discoloration to the foliage similar to initial fade in bark-beetle-attacked trees.

Action.--All foresters should be on the lookout for this type of damage in their sugar pine logging operations and report any infestation observed.

2. Needle Sheath Matsucoccus

This insect was reported as causing serious flagging in Jeffrey pine in the Mt. Pinos area of the Los Padres.

Action.--No action, pending an appraisal.

R. NEEDLE SHEATH MINER

An outbreak of this insect was reported last year at the Institute of Forest Genetics at Placerville and in the Sugar Hill plantation on the Modoc National Forest. Studies on the biology of the insect have been underway this season. This insect was successfully controlled in a small plantation at the Institute through the use of large volumes of malathion spray. There is evidence that the insect is quite widespread over the State but rarely causes serious damage.

Action.--Further field tests to develop the most practical control methods.

S. RED TURPENTINE BEETLE

Last season numerous detection reports were received of heavy turpentine beetle attack on trees on the perimeter of the 1955 fire areas.

This season the insect has teamed up with the western pine beetle and mountain pine beetle in and around the McGee burn infestation. Attacks by the turpentine beetle were consistently very heavy in the basal portion, occasionally going up to 20 feet above the ground level.

Action.--Any turpentine beetle broods, intermingled with the western pine beetle or mountain pine beetle in control areas, should be treated.

T. BALSAM WOOLLY APHID

This European insect is causing serious damage to true firs on some 350,000 acres in western Oregon and Washington. Infestations in the West have generally been restricted to grand fir, Pacific silver fir, and subalpine fir. Infestations have been found as far south as Crater Lake in Oregon. Surveys were conducted by the Station in August in northwestern California, but no evidence of the insect was found.

Action.--All foresters and woods workers in northwestern California should be on the lookout for this insect, and if any evidence is found the Station should be notified immediately. One encouraging aspect of the picture is that its preferred hosts are very limited in California.

U. OTHER MISCELLANEOUS FOREST INSECTS

Other miscellaneous forest insects reported or observed include a very heavy outbreak of the resin midge in the Shasta brushfield plantation; the Monterey pine weevil in Monterey pine near Monterey, the lodgepole terminal weevil on the Lassen and Inyo National Forest, the Ceanothus silk moth defoliation on bitterbrush on the Inyo National Forest and flatheaded borers in mesquite in Death Valley National Monument.

Table of Current Insect Infestations Requiring Action

Project Area	Location	Insect[1] Species	Host[2]	Recommended Action*
	NORTHERN CALIFORNIA			
	Areas Requiring Initial Action			
Pinecrest	Stanislaus NF	Db-Dm	PP-SP	Salvage or toxic spray
Sweetwater Feliciana	Sierra NF	Db-Dm	PP-SP	Salvage
Cannell Meadow	Sequoia NF	Dj	JP	Sanitation-salvage
Dodge Mine	Plumas NF	Dj	JP	Salvage or toxic sprays if appraisal indicates
Haystack Burn	Klamath NF	Db-Dm	PP-SP	Salvage if appraisal indicates
Truckee	Tahoe NF	Dj	JP	Salvage
Callahan	Klamath NF	Db-Dm	PP-SP	Salvage if appraisal indicates
Tony Gulch	Eldorado NF	RW	Pine hybrid	Control with toxic spray if appraisal indicates
Forest Hill	Tahoe NF	Db-Dm	PP-SP	Salvage if appraisal indicates

1/ Db - Western pine beetle
Dm - Mountain pine beetle
Dj - Jeffrey pine beetle
FH - California flatheaded borer
Ips- Pine engraver beetle
Rm - Lodgepole needle miner
RW - Reproduction weevil

2/ LP - Lodgepole pine
CP - Coulter pine
JP - Jeffrey pine
PP - Ponderosa pine
SP - Sugar pine

* Where maintenance control is recommended, the salvage of infested trees is advisable wherever it is possible. Also, where sanitation salvage is recommended, maintenance control should be done on the portion of the area which has previously been covered by sanitation logging.

Table of Current Insect Infestations Requiring Action (Cont'd.)

Project Area	Location	Insect Species	Host	Recommended Action
	NORTHERN CALIFORNIA			
	Areas Requiring Continued Action			
Osborne Hill	Nevada-Placer Counties	Db-Ips	PP	Winter appraisal to determine control needs within the zone of infestation
Tuolumne Meadows	Yosemite NP	Rm	LP	Toxic spray if earlier experiments warrant
Dingley-Delaney Creek	Yosemite NP	Dm	LP	Fell-spray
Experimental Forests and National Park areas	Statewide	Db-Dm Dj	PP-SP JP-LP	Maintenance Control
McGee Burn	Sequoia NF Sequoia-Kings Canyon NP	Db-Dm	PP-SP	Continue salvage + cut spray
Deadman	Inyo NF	Dj	JP	Maintenance control
Reds Meadow	Inyo NF	Dm	LP	Maintenance control
Bass Lake	Sierra NF	Db-Ips	PP	Maintenance control
Strawberry Valley	Plumas NF	Db-Dm	PP-SP	Continue salvage
Hat Creek	Lassen NF	Db-Dj	PP-JP	Salvage sale continue second year
	SOUTHERN CALIFORNIA			
	Areas Requiring Initial Action			
Alamo Mtn.	Los Padres NF	Db-FH	PP-JP	Sanitation salvage
	Areas Requiring Continued Action			
Figueroa Mtn.	Los Padres NF	Db	PP-CP	Maintenance control
Grade Valley	Los Padres NF	FH	JP	Maintenance control
Mill Potrero	Los Padres NF	FH-IPS	JP	Maintenance control
Charlton-Chilao & Barley Flats	Angeles NF	Db	PP-CP	Maintenance control

Table of Current Insect Infestations Requiring Action (Cont'd.)

Project Area	Location	Insect Species	Host	Recommended Action
		SOUTHERN CALIFORNIA		
		Areas Requiring Continued Action		
Crystal Lake	Angeles NF	Db-Dj	PP-JP	Maintenance control
Big Pines-Wrightwood	Angeles NF	FH-Ips	JP	Maintenance control
Arrowhead-Crestline	San Bernardino NF	Dm-Db-Dj	JP-PP-CP	Year-round maint. control
San Jacinto	San Bernardino NF	Db-FH	JP-PP-CP	Year-round maint. control
Barton Flats	San Bernardino NF	Db-Dj	PP-JP	Year-round maint. control
Corte Madera	Cleveland NF	Db-FH	JP-PP-CP	Maintenance control
Cuyamaca Rancho State Park	Cleveland NF	Db-FH	JP-PP-CP	Maintenance control

SUPPLEMENT TO

FOREST INSECT CONDITIONS

THE CALIFORNIA FLATHEADED BORER

1. Laguna Area

The California flatheaded borer continues in an epidemic status in southern California in areas where no control action has been taken. This insect is particularly serious in the Laguna recreation area on the Cleveland National Forest. A recent appraisal survey conducted in this area indicates that approximately 13,000 trees have been killed by this borer in 1957 on some 7,500 timbered acres. The infested trees range in size from 4 to 36 inches, the average size being about 15 inches. The volume loss per acre is estimated to be 170 board-feet for 1957 or 2.6 percent of the residual stand.

This is a particularly complex problem. While the flatheaded borer can be found in all dying trees, it is believed that factors other than insects are contributing to the high mortality rate. Mistletoe is particularly serious in the Laguna area and is believed to be an important factor leading to death. This combined with serious drought conditions, contributes to a stand under serious tension. Root diseases are also suspected as playing a role in decadence. A control program was instituted in several high-use campground areas early in 1957 but was limited to a relatively small portion of the whole Laguna area. This local control appears to have reduced losses in the areas treated. We estimate that it would cost between $125,000 to $150,000 to treat all of the currently infested trees in the Laguna. There seems to be little chance to salvage any of the infested trees so all trees would need to be treated by direct means. There is urgent need for information on the interacting factors contributing to tree mortality.

Action.--A limited control program in the high-use campground area is recommended. Effort should be made to secure research information on the interacting factors discussed above.

2. Wrightwood Area

San Bernardino National Forest

Indications are that an epidemic of the flatheaded borer exists in the Wrightwood Village area on private land.

Action --No action pending an appraisal.

W. WESTERN PINE BEETLE IN COULTER PINE

1. Julian Area

A recent appraisal survey in the Julian area indicates heavy group losses in Coulter Pine caused by the western pine beetle. It i estimated that there are about 1,500 infested trees in the Julian area at the present time. All of the infestation is on private land in high-use areas.

Action.--Control through cut, spray and salvage if possible.

L. PINE ENGRAVER AND WESTERN PINE BEETLE IN PONDEROSA PINE (See page 8)

1. Osborne Hill

A recent appraisal survey was conducted in the Osborne Hill Zone of Infestation to attempt to evaluate control results since only about 50 percent of the 1956 infested trees were controlled last year. Sampling of 1957 infested trees in and around groups controlled compared to similar groups not treated indicated the following. In seven groups treated the 1956 loss was 244 trees compared to 1957 loss of only 62 trees or about 75 percent reduction. In seven groups spotted but not treated the 1956 loss was 73 trees compared to 85 trees infested in 1957 or a slight increase. There is some indication that the current infestation is largely western pine beetle with practically no Ips damage observed. It is too early to predict what the winter brood of western pine beetle will do. If later developments indicate the need for control, such a program should be planned to treat all known infested trees.

Action.--No action pending further evaluation in late winter.